

Golf course superintendents, sod producers, nurserymen and garden center owners stroll over grass research plots during the Central Plains Turf Field Day at Kansas State University. These are 55 plots of 26 varieties of bluegrasses and fescues.

# Sand-Based Greens, Grid Field Renovation

## Report from Central Plains Turf Field Day

**W**ILL A TOTAL sand base support a turf golf green? What's a good way to establish and renovate a football field?

Are nitrogen compounds practical as herbicides?

A little more than 50 turf specialists came to look at these questions and study the answers at the June 2 Central Plains Turf Field Day at Manhattan in the shadow of Kansas State University.

The sun came for looks only. Visitors shivered in early morning temperatures from the mid 30s to mid 40s that equalled or surpassed all-time low records in many parts of the Midwest.

The spring coolness followed one of the more severe winters the region has experienced. "We've had the worst ice crust since '35," reported Ray Keen, professor of horticulture at K-State, shortly after he greeted guests on the grounds of the university's turf research plots.

Bermudagrass varieties, being grown to see which are adaptable to the area, told the story. So severe was the winter that it killed the "sissy Bermudagrasses" to the extent of reducing varieties being considered from 270 to 24.

"That's good," Prof. Keen told the group. "It means those varieties won't be dying on your golf courses later on."

### Golf Greens on Sand Base

Interest was intense concerning some 50 varieties of bentgrasses

growing on a total sand base.

In preparing the plots, Prof. Keen said a four-inch blanket of road gravel went down first. Then a 12-inch layer of pure sand was added. Actually, the sand was "washback," or extremely fine sand, Keen explained. "It holds quite a bit of water," he said. Finally, the plot was topped with an inch of peat.

Plots are getting no fungicide treatments intentionally, Keen said, and dollar spot was eliminating some grass varieties.

A commercial extension of sand-base turf green research was viewed and played upon at the end of the day's activities.

Stagg Hill Golf Course, marking its first anniversary of operation, features the sand-base greens. Keen was the paid greens and fairways consultant as the course was designed and constructed. The 352-acre course is on river-bottom land, part of which was a watermelon and cantaloupe farm at one time.

The course has 18 holes and is

Tom Shackleford, who's responsible for K-State's grounds, explains (right) how improperly mixed soil led to a compacted surface at the new K-State football stadium. He was impressed with coverage attained by Windsor and Fyking bluegrasses since planting this spring. On the next page, visitors are inspecting the field's soil composition and turf coverage.

expandable to 27. It has a driving range, a putting clock, and an underground sprinkling system with pop-up sprinklers to tend the 5000 sq. ft. average greens and extra-size tees. The course incorporates a lake, a small lagoon, and most fairways are lined with 50-ft. trees.

Keen believes the sand-base greens will need a little more water in hot weather. But off-setting advantages, he pointed out, are that play can continue almost as soon as a thunderstorm quits and there's no soil compaction from heavy traffic.









Field day guests hear research observations on 60 varieties of bentgrasses growing on a total sand base. Note in the lower right of the big picture how dollar spot had affected one variety while plots on either side appear to be perfectly healthy. Above, Ray Keen, K-State professor of horticulture and field day chairman, shows Merle Shogren how an inch of peat was used to top off the 'washback' sand.

#### Football Field Renovation

Compaction and traffic were considerations also, as K-State built its new football field and stadium.

Field composition was specified to be 60% sand, 20% haydite, 15% peat and the rest soil, said Tom Shackelford, who's in charge of the university grounds.

Bermudagrass was sowed for quick cover. When the season opened last fall, it became apparent, Shackelford said, that ingredients weren't mixed enough.

"You'll never find a football coach who says he doesn't want a hard field," Shackelford said, "but this field was so hard that before the first game was played, 75 pairs of soccer shoes were purchased."

Of course, Shackelford continued, every time runners broke loose, they were gone, demonstrating to fans' delight the reason coaches like a hard field. K-State beat Colorado State 21-0, for its first opening-game victory since 1964.

The bermudagrass did not come back this spring, Shackelford said, so the field was planted to Windsor and Fylking bluegrass. "I'm amazed at how quickly the grass has spread," he said. Nevertheless, the plan is to plow up the field again, right after the season ends this year,

Would you believe this football field withstands 15 to 18 games a season? The Blueville Nursery in Manhattan renovates every year.

to thoroughly mix the soil with "everything we can think of."

#### Good Turf Treated as Crop

As guests paused to allow a barbecued chicken dinner to settle, they listened to Darrell Westervelt, owner of Blueville Nursery in Manhattan, tell how he renovates the football field in Bishop Stadium, part of the city-county park and fairgrounds.

Keeping healthy turf on this field isn't the normal football field maintenance task. This is no normal field, considering its intensive use.

"Last season, 18 games (high school) with three in the rain were played," said Westervelt. Fourteen or 15 is an average season.

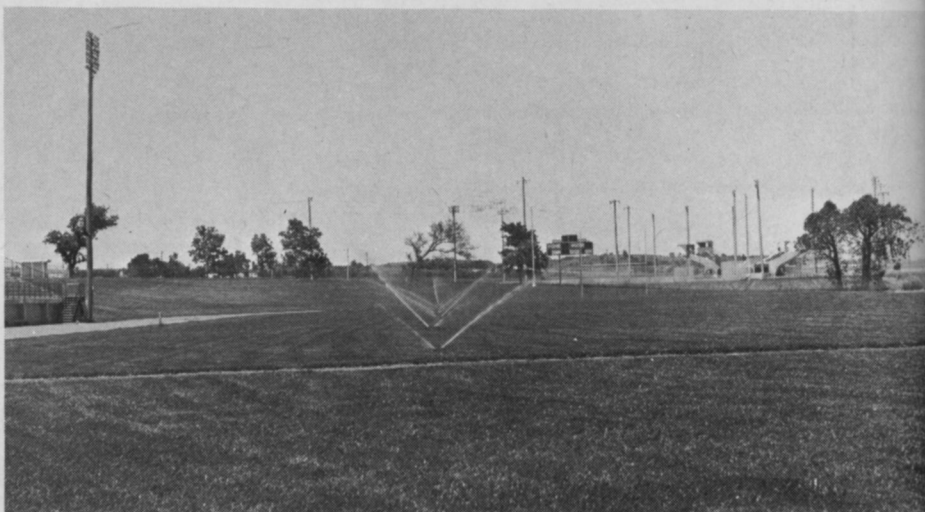
"I approach the task of building a

good playing turf as though it were a crop, to be grown for harvest during the football season," he said.

Westervelt was given the contract to care for the field after its first season in 1966. It had been seeded to bermudagrass for the quick cover.

After the season, he began the renovation by hauling in 40 tons of sludge from the city disposal plant. Forty to 50 cubic yards of top soil also were added to fill in depressions.

Seeding was done on Feb. 15, 1967; the rate, four lbs. of K31 and one pound of Kentucky bluegrass per 1,000 sq. ft. The same area got one pound of actual nitrogen and



two pounds of phosphorus. Another pound of N was added in May, and another pound in September.

After the season, the renovation is repeated; topdress with soil and sludge (applied with a manure spreader), aerate, use harrow and drag mat to break up clods, fertilize, and reseed.

"I reseed at the full rate where the turf is torn up, and at the half rate elsewhere," said Westervelt.

"We mow at three inches during the summer, then lower to 2½, or two inches during the season.

"In high school football, it's not so much of whether you win or lose the game that concerns the coaches, but how to prevent broken arms and legs.

"We cut the grass high and may even water a few days ahead to give the boys a soft place to fall."

The field incorporates a buried Weathermatic watering system with Turbo-jet pop-up sprinklers.

Before the group visited the field, they listened to biology professor Dr. Loran C. Anderson give a scholarly presentation on the anatomy of a grass plant.

It is essential to know the basic make-up of a plant, he said, before you can scientifically breed new varieties, determine how chemicals and diseases affect plant structure, or even to determine which cultural practices are best. New research methods, he added, are revealing there are more classes of grasses than first thought, and that some grasses have been improperly categorized.

#### Turf Industry Gains Recognition

Dr. Floyd Smith, vice-president for agriculture, officially welcomed the turf specialists, composed of nurserymen, golf course superin-

tendents, garden center owners, and sod producers.

There is "increasing recognition of the contributions of the turf industry in the state," Dr. Smith said. Emphasis is on improving our environment, he continued, and "we can look to the growing of plants as one way of controlling pollution."

Interest among state legislators, said Dr. Smith, has taken the form of a \$62,000 horticulture appropriation available beginning this month to deal with the unique climate and soil characteristics around the Wichita area.

Research will be initiated on horticulture problems related to the food crops and the safe use of agricultural chemicals.

"But there will be a very decided interest in research concerning turf-grasses, ornamentals and shrubs," Dr. Smith said.

#### Nitrogen Compounds as Herbicide

Earlier in the day, Richard Pence showed results of his experimental work with anhydrous ammonia used as a herbicide.

Pence's studies are supported in part by an assistantship from the Central Plains Turfgrass Foundation.

Pence enclosed three turf areas, each about one yard square and 2½ inches deep, then released anhydrous ammonia at the rates of 200 lbs. per acre, 300 lbs. and 400 lbs. An estimated 95% to 100% total vegetation kill was achieved in all three "boxes."

How the grass and broadleaf plants were killed isn't known for sure. Anhydrous ammonia, coming out of the tank as a liquid, is 28 degrees below zero. It immediately vaporizes at higher temperatures. One theory is that vegetation is killed by freezing. Another theory, based on ammonia's great affinity for water, is that, as the liquid ammonia vaporizes, it saps the plant structure of its water content, causing death by desiccation.

Whatever the cause of death, the bigger problem, Pence said, is to make the application practical. One method he intends to try is pulling the inverted box device over turf with a tractor as the anhydrous ammonia is released.

Darrell Westervelt, owner of Blueville Nursery, uses a pencil to show the three-inch height the grass is mowed during the growing season. It's mowed either 2½ or 2 inches during the high school playing season. With Westervelt is employee Leroy Hannebaum.



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